

CLAIMS

1. A control system established through a network, the control system comprising:

a plurality of system component nodes each having a
5 communication section for generating a unique global address
by the system component node itself upon connection to the
network, and for transmitting the generated global address,
attribute information of the system component node and
installation position information of the system component node,
10 to the network; and

a management node for monitoring and operating the system
component nodes through the network and managing control of
the whole control system, wherein

the management node includes:

15 a communication section for performing communication
through the network;

a storage section for storing definition information of
the system component nodes;

a display section for displaying an operation and monitor
20 screen;

a definition information generation section for
generating definition information based on the global address,
the attribute information and the position information which
are acquired through the network, and for storing the
25 definition information in the storage section;

a screen generation section for making the display section display the operation and monitor screen of the system component nodes from the definition information in the storage section; and

5 a control function providing section for reading information defining an operation of the system component node from the storage section, and for outputting the read information to the communication section.

10 2. The control system as claimed in claim 1, wherein the system component nodes are at least one of a sensor, an actuator and a controller.

15 3. The control system as claimed in claim 1, wherein the definition information includes the global address, an installation position, a tag, a control function and a configuration of the operation and monitor screen of the system component node.

20 4. The control system as claimed in claim 1, wherein the definition information generation section has an attribute information determination section for determining validity of the attribute information.

25 5. The control system as claimed in claim 1 or 4, wherein

the attribute information includes at least one of a type, a manufacturer, a model and a serial number of the system component node.

5 6. The control system as claimed in claim 1, wherein the communication sections of the system component node and the management node have an address generation section for generating a unique global address.

10 7. The control system as claimed in claim 1, wherein the communication sections of the system component node and the management node perform packet communication.

15 8. The control system as claimed in claim 7, wherein the communication section has an authentication section for adding authentication data to a header of a packet, and determining validity of the received packet according to the authentication data added to the packet.

20 9. The control system as claimed in claim 7, wherein the communication section has a cryptograph processing section for encrypting a packet.

25 10. The control system as claimed in claim 7, wherein the communication section of the system component node

multicasts a packet including the generated global address as a source address to all of the management node and the system component nodes connected to the system, and

the communication section of the management node
5 receives the multicasted packet and sends a response to the received packet to the system component node.

11. The control system as claimed in any one of claims 6 to 10, wherein Internet protocol specification IPv6 is used
10 as a communication protocol for connecting to the network.

12. The control system as claimed in claim 1, wherein the system component node has a position detection section for detecting the installation position.

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13. The control system as claimed in claim 12, wherein the position detection section detects the position using radio waves or ultrasonic waves.

20 14. The control system as claimed in claim 1, wherein the network has a switching hub, and

the system component node is connected to the switching hub.

25 15. The control system as claimed in claim 2, wherein

the controller has a self-learning section for learning more appropriate control function by performing transmission and reception to and from the sensor and the actuator, and transmits the learned control function to the management node, and

5 the definition information generation section of the management node generates the definition information according to the control function from the controller.

16. The control system as claimed in claim 1, wherein
10 the management node performs communication with the system component node through the network.